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exceptions in the clusters observed strongly suggests such an hypothesis.

Two hypotheses to account for the peculiar distribution in magnitude suggest themselves: 1st. That it is due to a difference in the size of the stars; 2d. That it is due to a difference in constitution or physical condition.

The almost complete lack of physical data at present prevents any useful discussion of these hypotheses. Although the first appears to be the most probable, yet it is conceivable that this peculiar distribution might result from a difference in constitution of the stars themselves.

In this connection attention may be called to the relation which has been supposed to exist between the nebulæ and the star-clusters. The belief has been gaining way since photography has shown the real structure of so many of these objects that they are but different stages in the process of evolution; that a star-cluster has been formed by the condensation of the matter in a nebula.

A study of the nebulæ which have been observed with the Crossley reflector shows that a large proportion are spiral, and that practically all the spirals are lenticular or disk-shaped. Many of them are relatively very thin. Now, if the globular clusters are really spherical, as seems probable, it is difficult to see how they could have originated from a disk-shaped nebula (spiral?).

As there are other forms, also, of nebulæ and star-clusters, it is not necessary to assume that the order of evolution mentioned above is the only one. But the natural tendency has been to connect such changes as these with the spirals which, by their appearance, seem to indicate greater systematic internal activity than others.

C. D. PERRINE.

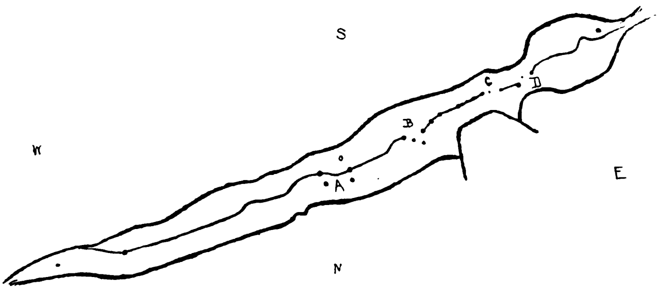
July 17, 1904.

OBSERVATIONS OF A RILL EXTENDING THROUGH THE LUNAR VALLEY OF THE ALPS.

On the night of April 23, 1904, while showing the regular Saturday-night visitors the Moon through the 36-inch refractor, I noticed a rill at several points in the Alpine Valley. The seeing was too poor to make satisfactory observations, but at times the rill could be glimpsed for nearly the whole length of the valley. It was observed on April 23d, May 6th, 22d, 23d, June 4th, July 2d, and August 30th, under both evening and morning illumination.

The rill extends the entire length of the valley, through the middle, and is continuous except at three points. It was suspected to cross one of these short gaps, and it is possible that, by observing diligently under good conditions, the rill could be traced across them all. It is visible only when the Moon is from eight to nine days, and twenty to twenty-one days, old. Owing to extreme narrowness,—the width is from three hundred to six hundred feet,—the rill can be seen only with a large telescope, and requires excellent atmospheric conditions.

The accompanying drawing is compiled from all the sketches. No attempt has been made to include details except such as are connected with the rill, or craterlets very near to it. Attention may be called to the great number of craterlets strung along the rill in some regions and to the fact that at all the gaps the rill terminates in craterlets.



Rill in the Valley of the Alps.

I have examined a number of the negatives of this region of the Moon, taken with the 36-inch refractor, especially those taken with an enlarging lens, but fail to find any trace of the rill upon them.

C. D. Perrine.

October 16, 1904.

The Number of the Nebulæ.

Professor Keeler, soon after beginning his program of work with the Crossley reflector, showed that the number of the nebulæ is very much greater than had been supposed. He